GROUP 52B

SUPPLEMENTAL RESTRAINT SYSTEM (SRS)

CONTENTS

GENERAL INFORMATION

M2521000100273

- The driver's air bags and seat belts with pre-tensioner have been standard equipped on all vehicles.
- To improve safety against side-impact collisions, optional side air bags and curtain air bags are available to all the models.
- An inflator that does not contain sodium azide has been adopted for all types of the air bag modules.
- The air bag cut off switch which can optionally enable and disable the passenger air bag has been equipped in the glove box (option). <Vehicles with front passenger's air bag >

SUPPLEMENTAL RESTRAINT SYSTEM (SRS)

The SRS is designed to supplement the front seat belts. It eliminates or reduces injury to the front passenger(s) by deploying air bag(s) in case of a head-on collision.

SRS SIDE AIR BAG

Side air bag systems in the front seats are activated when sideward impacts applied to the vehicle exceed a criteria to protect the occupants' upper bodies.

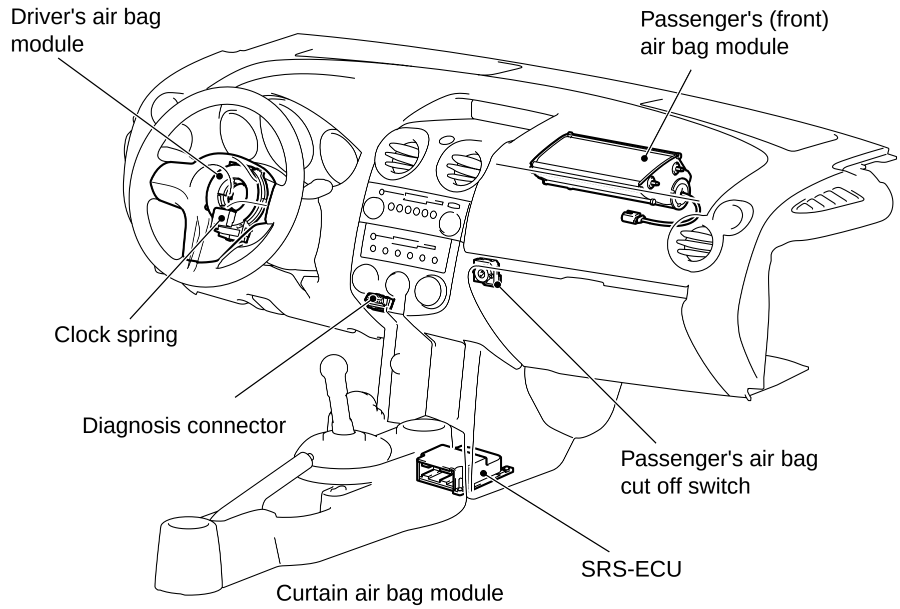
SRS CURTAIN AIR BAG

The curtain air bag systems are activated when sideward impacts applied to the vehicle exceed a criteria, to protect the heads of the occupants in the front and rear seats.

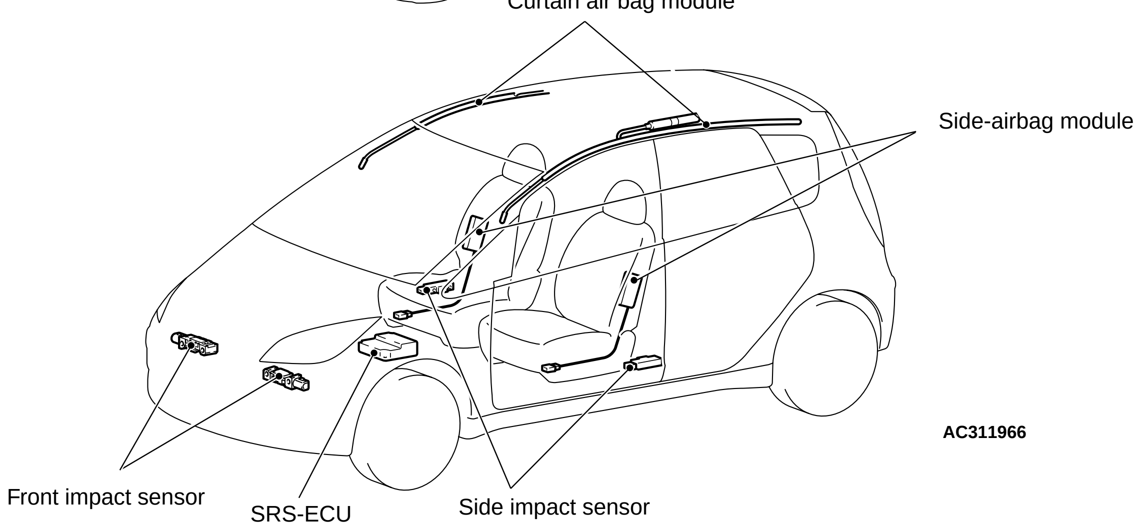
SEAT BELT WITH PRE-TENSIONER

The seat belts with pre-tensioner work simultaneously with the SRS. The pre-tensioner takes up seat belt slack immediately when a collision takes place, restraining the front passengers sooner than the SRS. This prevents the passengers from moving forward.

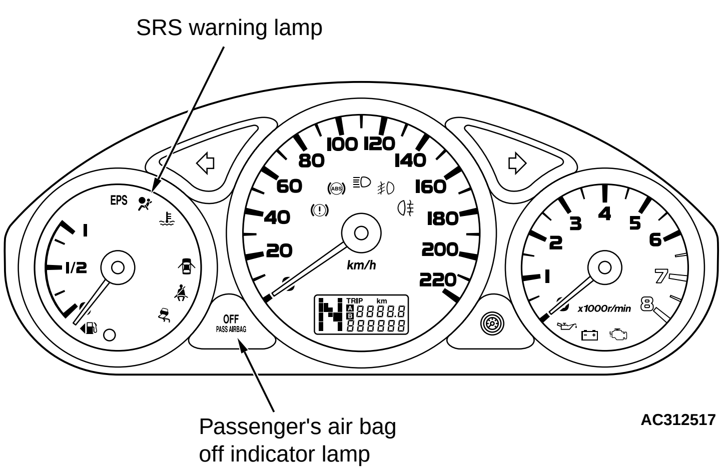
CONSTRUCTION DIAGRAM



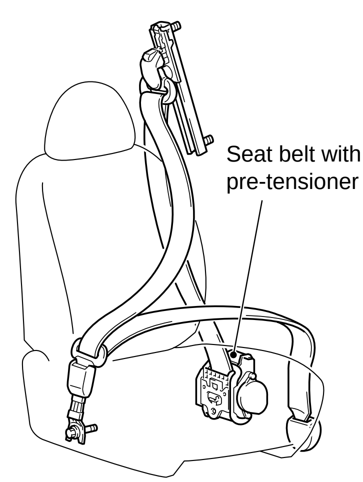
AC311965



AC311966



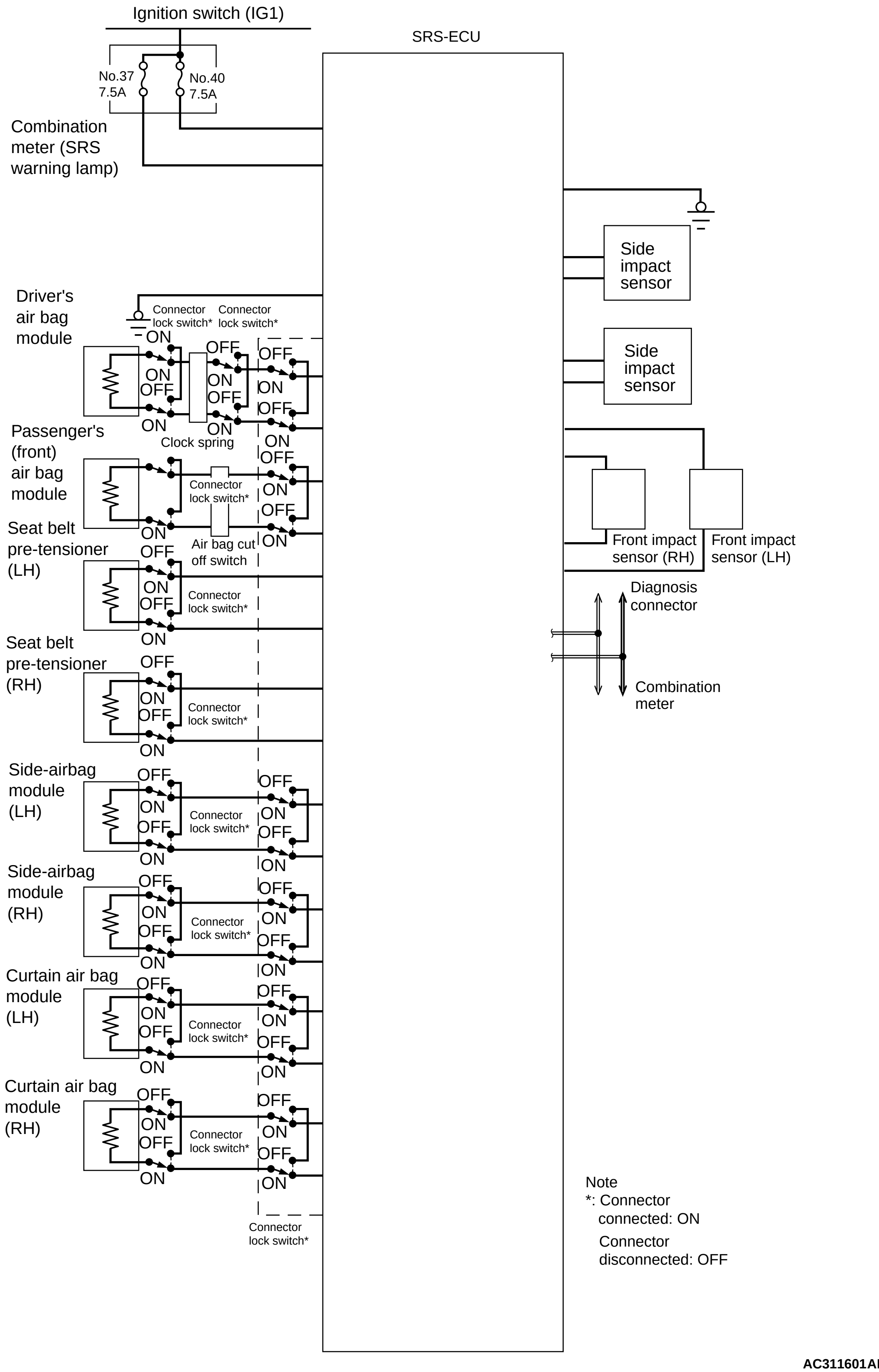
AC312517



AC207230

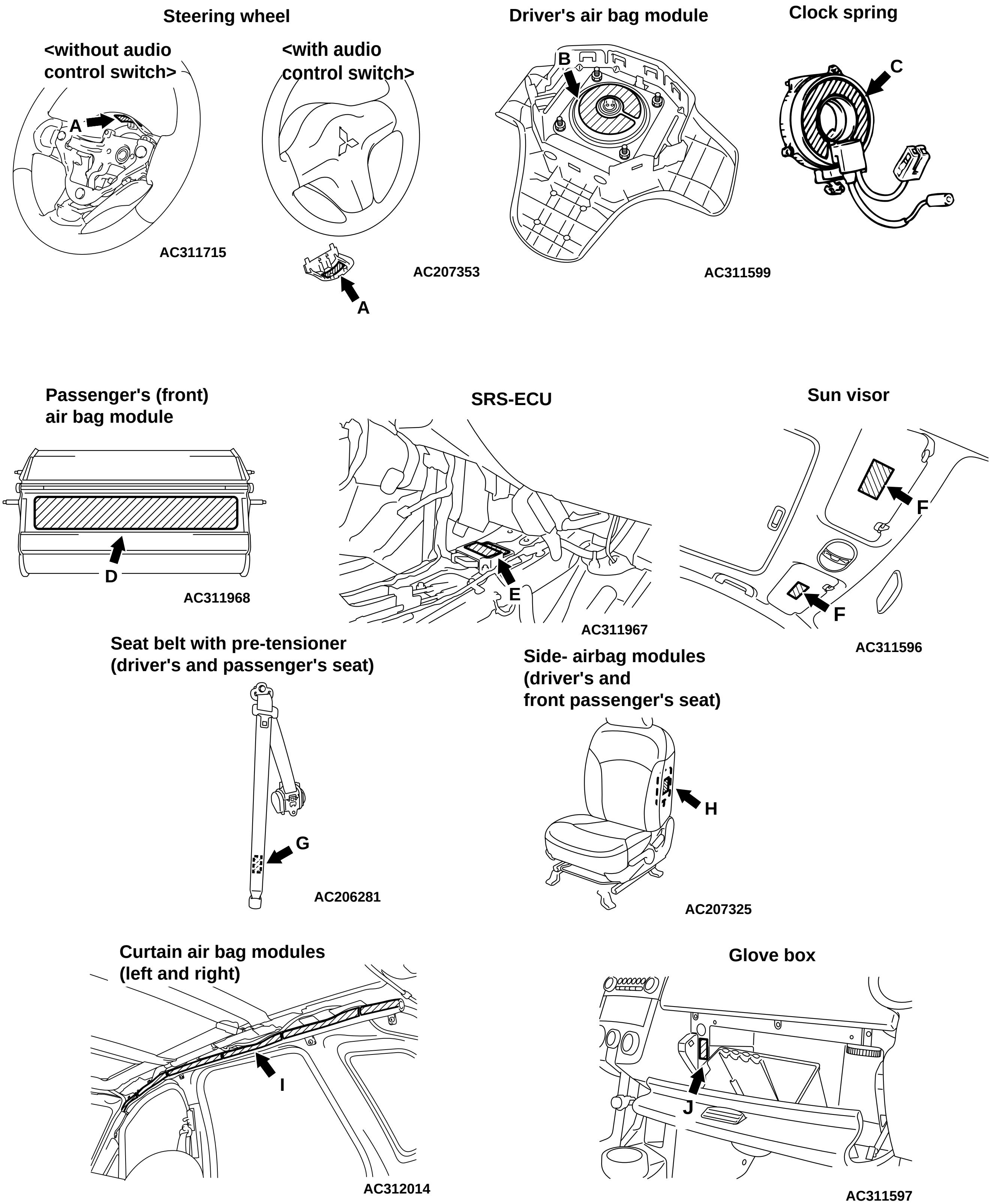
AC312942 AB

SRS SYSTEM CIRCUIT DIAGRAM



CAUTION LABELS

Labels to indicate cautions regarding the handling and the services of SRS air bag are attached on the position shown in the following illustration.



AC312262 AB

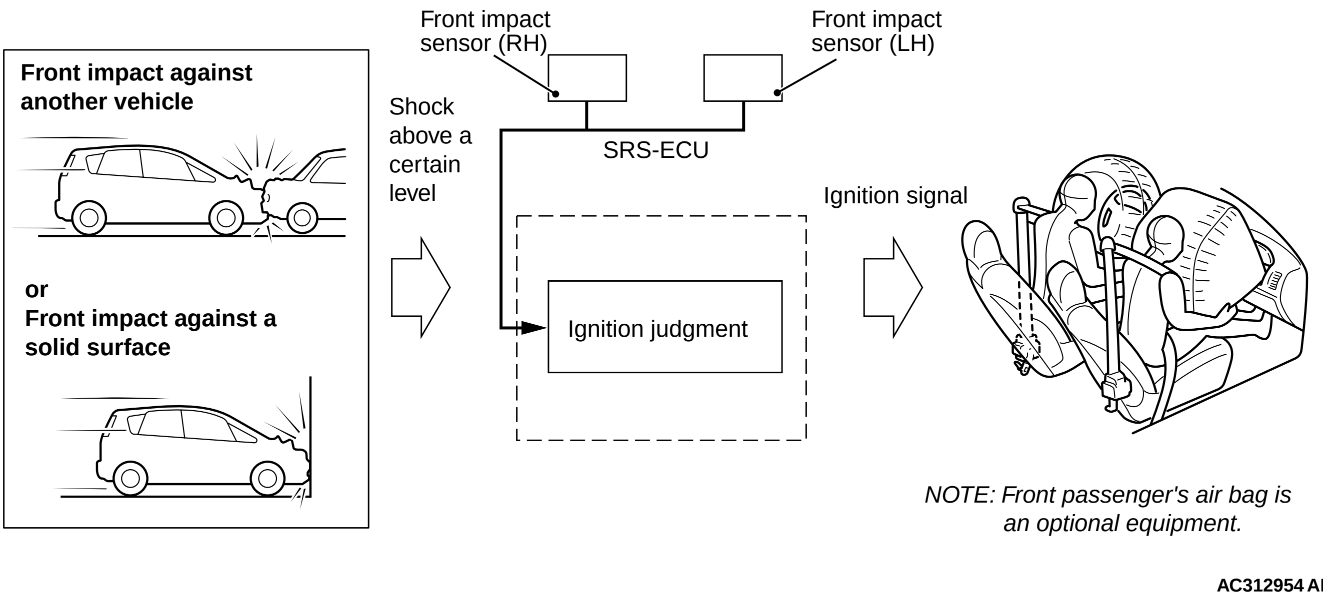
Label contents	
A	WARNING SRS BEFORE REPLACING STEERING WHEEL, READ SERVICE MANUAL. THIS AIR BAG MODULE CANNOT BE REPAIRED. DO NOT DISASSEMBLE OR TAMPER.
B	DANGER FLAMMABLE MATERIAL TO PREVENT PERSONAL INJURY. DO NOT DISMANTLE, INCINERATE, OR BRING INTO CONTACT WITH ELECTRICITY. STORE BELOW 200°F (93°C). READ SERVICE MANUAL FOR DETAIL
C	CAUTION: SRS CLOCK SPRING THIS IS NOT A REPAIRABLE PART. IF DEFECTIVE, REPLACE ENTIRE UNIT ACCORDING TO THE SERVICE MANUAL INSTRUCTIONS. TO RE-CENTRE: ROTATE CLOCKWISE UNTIL TIGHT. THEN ROTATE IN OPPOSITE DIRECTION ROUGHLY 3 3/4 TURNS AND ALIGN ARROWS >><<.
D, F <driver’s side>	WARNING DEATH OR SERIOUS INJURY can occur • ALWAYS use SEAT BELT and CHILD SEAT. • DO NOT place rear-facing child seat on the front passenger seat with air bag. • CHILDREN are SAFER in THE REAR SEAT. • DO NOT sit or lean unnecessarily close to the air bag. • DO NOT place or install any objects over the air bag or between the air bag and yourself. • SEE the owner’s manual for further information and explanations.
E	CAUTION: DO NOT DISASSEMBLE OR DROP. IF DEFECT REFER TO SERVICE MANUAL.
F <passenger’s side>	WARNING DEATH OR SERIOUS INJURY can occur • DO NOT place rear-facing child seat on this seat with air bag. • CHILDREN are SAFER in THE REAR SEAT. • ALWAYS use SEAT BELT and CHILD SEAT.
G	DANGER: SEAT BELT PRETENSIONER DO NOT DISASSEMBLE OR IMPACT REFER TO SERVICE MANUAL FOR INSTRUCTIONS, HANDLING, STORAGE AND DISPOSAL PROCEDURES.

Label contents	
H	DANGER contains HIGH PRESSURE GAS and FLAMMABLE MATERIAL TO PREVENT PERSONAL INJURY: • DO NOT REPAIR, DISMANTLE, INCINERATE OR BRING INTO CONTACT WITH ELECTRICITY (SUCH AS VOLTMETER) • DO NOT STORE IN A PLACE WHERE TEMPERATURE REACHES 93°C (200°F) OR MORE. • DO NOT INSTALL INTO ANOTHER VEHICLE. • DO NOT INSTALL ANY FOREIGN OBJECTS BETWEEN AIR BAG AND ITS COVER, OR WITHIN MODULE. • FOLLOW THE INSTALLATION PROCEDURE IN THE REPAIR MANUAL WHEN INSTALLING A SEAT COVER. • SERVICE OR DISPOSE OF AIR BAG MODULE AS DIRECTED IN THE REPAIR MANUAL.
I	WARING SRS AIRBAG • THIS AIRBAG MODULE CANNOT BE REPAIRED. (SEE SERVICE MANUAL FOR INSTRUCTIONS ON DIAGNOSIS AND REPLACEMENT) • DO NOT DIAGNOSE USING ELECTRICALLY POWERED TEST EQUIPMENT OR PROBING DEVICES. • TAMPERING OR MISHANDLING CAN RESULT IN PERSONAL INJURY. • STORE THE REMOVED AIRBAG WITH THE PAD OR COVER SURFACE UP. (REFER TO SERVICE MANUAL FOR SPECIAL HANDLING OR STORAGE) • DO NOT STORE ABOVE 93°C (200°F)
J  AC312950	

SYSTEM OPERATION

FRONT AIR BAG AND SEAT BELT WITH PRE-TENSIONER

M2521000700037

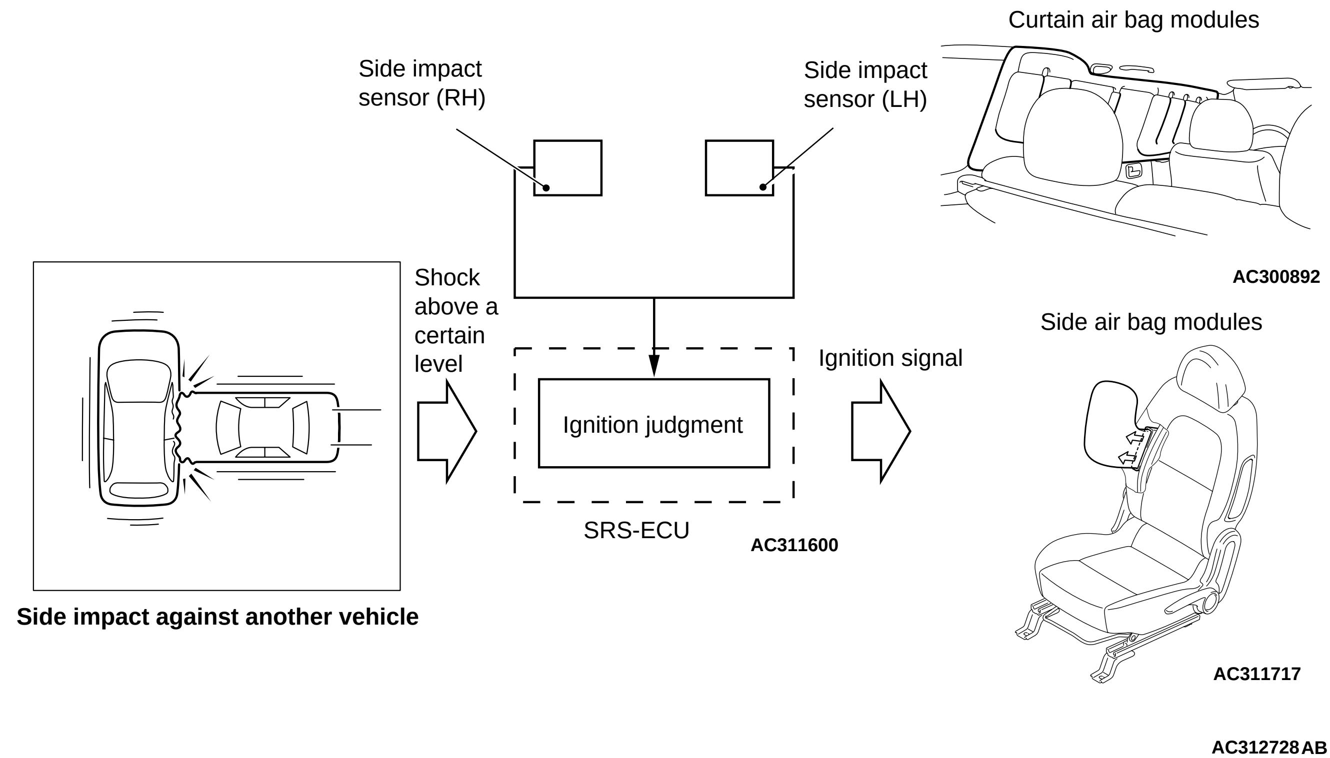


In case of a frontal collision, if the front impact sensor inside the engine compartment, the analogue G sensor in the SRS-ECU and the front air bag safing sensor simultaneously detect an impact that exceed a certain criteria (turn ON), the SRS-ECU sends an ignition signal to the air bag modules (squibs) and seat belt pre-tensioners (squibs) on the driver and passenger sides, thus inflating the air bags and operating the seat belt pre-tensioners.

SIDE AND CURTAIN AIR BAGS

M2521000800034

SIDE AND CURTAIN AIR BAGS



In case of a side collision, if an impact that based on criteria is simultaneously detected by the front side-impact sensors installed in a centre pillar and respectively and by the side air bag safing G sensor (the sensors turn ON), the SRS-ECU sends an ignition signal to the side air bag module and curtain air bag module on the relevant side to inflate them.

SYSTEM CONSTRUCTION

DRIVER'S SIDE AIR BAG MODULE

M2521002000164

Refer to GROUP 37A – Steering wheelP.37-3.

FRONT PASSENGER'S SIDE AIR BAG MODULE

M2521003000156

The front passenger's side air bag module structure is the same as that for 2004 LANCER/LANCER WAGON

SIDE AIR BAG MODULE

M2521004000104

The side air bag module structure is the same as that for 2004 LANCER/LANCER WAGON.

CURTAIN AIR BAG MODULE

M2521000500055

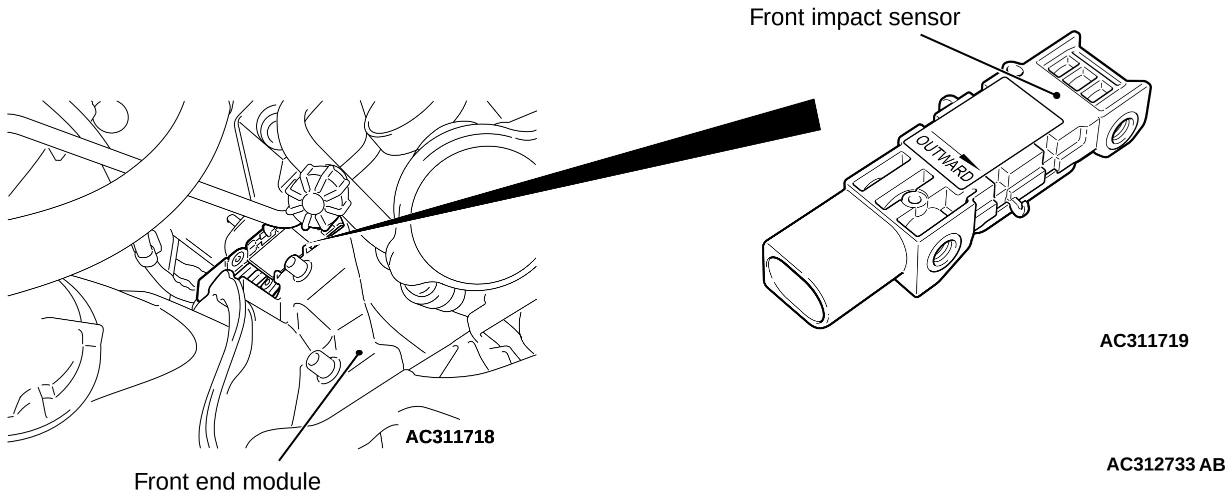
The curtain air bag module consists of an air bag, an inflator, and the fixing gear relating to those parts, and is installed in the roof side sections (from the driver's and the passenger's front pillars to the rear pillars).

The air bag is made from nylon with the inside coated with silicon, and housed in the roof side sections, folded up compactly.

The inflator is of a hybrid type filled with high-pressure gas (major component: argon). When current passes through the squib to ignite the igniter powder, the burst disk bursts, letting the gas spur out of the nozzle.

FRONT IMPACT SENSOR

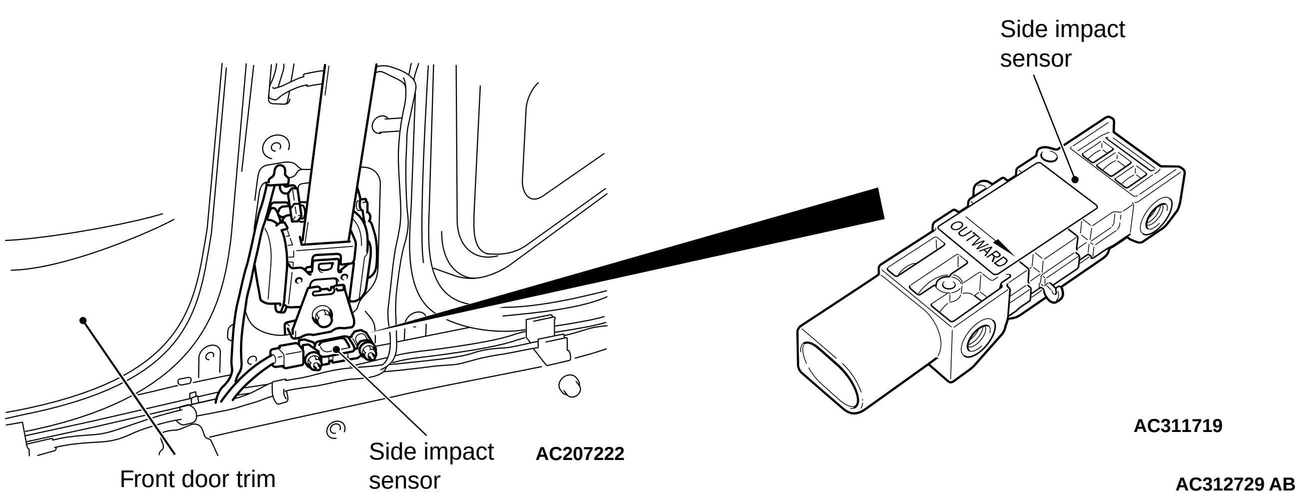
M2521005000129



The front impact sensors are installed on front end module, and contains an analogue G sensors.
The front impact sensors transmits coded acceleration data to SRS-ECU. The SRS-ECU then determines whether to operate the driver's air bag, front passenger's air bag and seat belt pretensioners, and then outputs an ignition signal when necessary. The front impact sensor also diagnoses itself, and sends a diagnosis code to the SRS-ECU if a problem occurs.

SIDE IMPACT SENSOR

M2521006000100

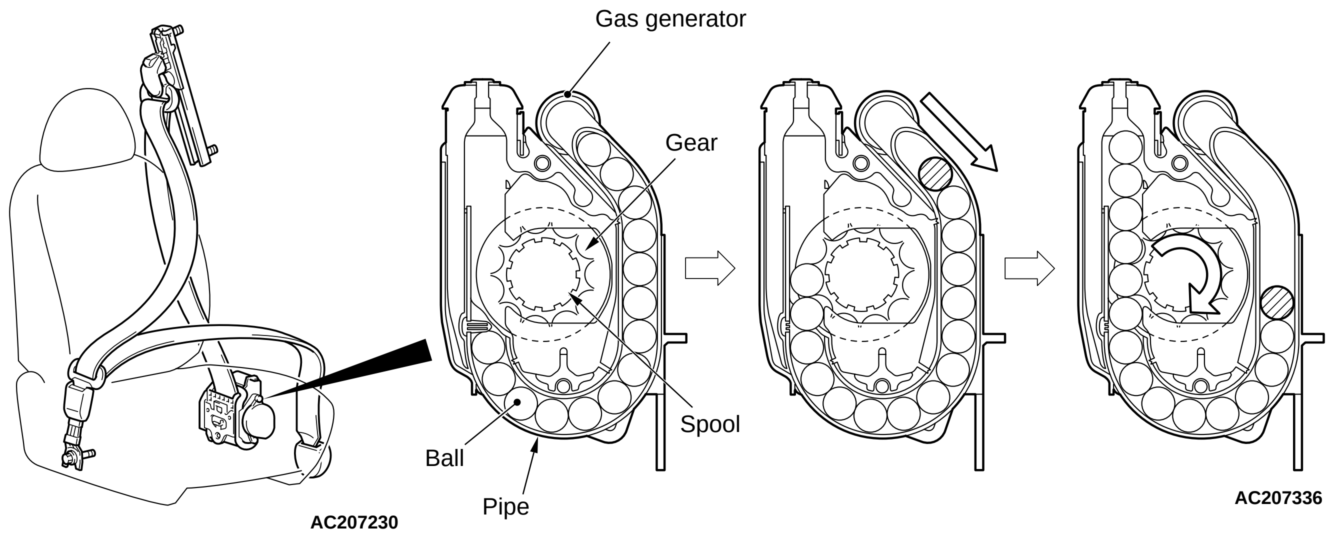


The side impact sensor is installed in the lower parts of the centre pillars and contains an analogue G sensor.

The side impact sensor transmits coded acceleration data to the SRS-ECU. Based on the data, the SRS-ECU then determines if the side and/or curtain air bags should be inflated, and sends an ignition signal. The side impact sensor also diagnoses its own components, and sends a diagnosis code to the SRS-ECU if a problem occurs.

SEAT BELT WITH PRE-TENSIONER

M2521008000140

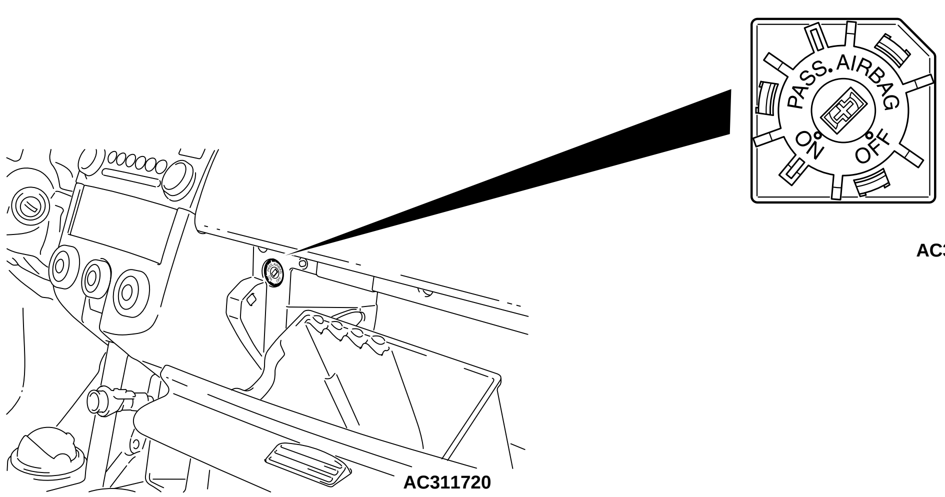


AC208129 AC

The seat belt incorporating the pretensioner automatically winds the seat belt upon front impact to reduce forward shifting of the passenger.
Upon front impact the pretensioner ignites the gas generator and emits gas with the SRS-ECU signal when the front impact sensor, attached to the front of the body, detects an impact that exceeds the criteria. By this gas pressure, a ball moves in the pipe and rotates the gear. This gear rotation operates the spool in the direction of retracting the belt, and the webbing is retracted.

PASSENGER’S AIR BAG CUT OFF SWITCH

M2521001700029



AC312760 AB

The air bag cancel switch has been equipped in the glove box. Deployment of the passenger air bag can be forcibly disabled by inserting the ignition key in this switch and turn it to the OFF position. Also the indicator lamp in the combination meter illuminates.

SRS-ECU

M2521007000222

The SRS-ECU incorporates an analogue G sensor and safing G sensor for frontal collisions and a safing G sensor for side collisions.
In frontal collisions, the driver's and front passenger's air bags deploy only when both the analogue and safing G sensors detect simultaneously a collision-induced G of a criteria as in the case with the conventional system.
In side collisions, the side and curtain air bags on the side subjected to an impact deploys if the side impact sensors and the SRS-ECU safing G-sensor detect simultaneously lateral G forces above criteria.
The SRS-ECU is provided with the following capabilities:

- Backup power supply in case of power failure in collisions: Backup capacitor
- Self-diagnosis function to avoid system's operation errors and improve its reliability

⚠ CAUTION

Never disassemble the SRS-ECU.

DIAGNOSIS FUNCTION

The SRS-ECU has the following functions to make system check using MUT-III easy.

- Diagnosis code set
- Service data output

DIAGNOSIS CODE SET

The SRS-ECU diagnoses the following items and stores a diagnosis code in the non-volatile memory (EEPROM*1) when a problem is detected. Therefore, the memory is not deleted after a battery terminal is disconnected. (The diagnosis code memory can be deleted by the MUT-III).

CODE NO.	MAJOR CONTENTS OF DIAGNOSTICS
B1400*3	Driver's air bag (1st squib) short-circuited
B1401*3	Driver's air bag (1st squib) open-circuited
B1402*3	Driver's air bag (1st squib) drive circuit (earth side) short-circuited
B1403*3	Driver's air bag (1st squib) drive circuit (power supply side) short-circuited
B1405*4	Driver's air bag (1st squib) activating circuit open-circuited
B1406*4	G-sensor of front impact sensor (RH) failure
B1407*3	Front impact sensor (RH) voltage error
B1408*3	Front impact sensor (RH) communication error
B1409*3	Front impact sensor (RH) communication impossible
B1410*3	Passenger's (front) air bag (1st squib) short-circuited
B1411*3	Passenger's (front) air bag (1st squib) open-circuited
B1412*3	Passenger's (front) air bag (1st squib) drive circuit (earth side) short-circuited
B1413*3	Passenger's (front) air bag (1st squib) drive circuit (power supply side) short-circuited
B1415*4	Passenger's (front) air bag (1st squib) activating circuit open-circuited
B1416*4	G-sensor of front impact sensor (LH) failure
B1417*3	Front impact sensor (LH) voltage error
B1418*3	Front impact sensor (LH) communication error
B1419*3	Front impact sensor (LH) communication impossible
B1420*3	Side-airbag squib (RH) short-circuited
B1421*3	Side-airbag squib (RH) open-circuited

CODE NO.	MAJOR CONTENTS OF DIAGNOSTICS
B1422*3	Side-airbag squib (RH) drive circuit (earth side) shorted
B1423*3	Side-airbag squib (RH) drive circuit (power supply side) shorted
B1425*4	Side-airbag squib (RH) drive circuit open
B1426*4	G-sensor of side impact sensor (RH) failure
B1427*3	Side impact sensor (RH) voltage error
B1428*3	Side impact sensor (RH) communication error
B1429*3	Side impact sensor (RH) communication impossible
B1430*3	Side-airbag squib (LH) short-circuited
B1431*3	Side-airbag squib (LH) open-circuited
B1432*3	Side-airbag squib (LH) drive circuit (earth side) shorted
B1433*3	Side-airbag squib (LH) drive circuit (power supply side) shorted
B1435*4	Side-airbag squib (LH) drive circuit open
B1436*4	G-sensor of side impact sensor (LH) failure
B1437*3	Side impact sensor (LH) voltage error
B1438*3	Side impact sensor (LH) communication error
B1439*3	Side impact sensor (LH) communication impossible
B1440*3	Curtain air bag squib (RH) short-circuited
B1441*3	Curtain air bag squib (RH) open-circuited
B1442*3	Curtain air bag squib (RH) drive circuit (earth side) shorted
B1443*3	Curtain air bag squib (RH) drive circuit (power supply side) shorted
B1445*4	Curtain air bag squib (RH) drive circuit open
B1450*3	Curtain air bag squib (LH) short-circuited
B1451*3	Curtain air bag squib (LH) open-circuited
B1452*3	Curtain air bag squib (LH) drive circuit (earth side) shorted
B1453*3	Curtain air bag squib (LH) drive circuit (power supply side) shorted
B1455*4	Curtain air bag squib (LH) drive circuit open
B1460*3	Seat belt pre-tensioner (RH) squib short-circuited
B1461*3	Seat belt pre-tensioner (RH) squib open-circuited
B1462*3	Seat belt pre-tensioner (RH) squib (earth side) short-circuited
B1463*3	Seat belt pre-tensioner (RH) squib (power supply side) short-circuited
B1465*4	Seat belt pre-tensioner (RH) (squib ignition drive circuit) system detected open
B1466*4	Analogue G-sensor malfunction
B1467*4	Safing G-sensor open-circuited (for frontal collision)
B1469*4	Safing G-sensor malfunction (for side collision)

CODE NO.	MAJOR CONTENTS OF DIAGNOSTICS
B1470[*3]	Seat belt pre-tensioner (LH) squib short-circuited
B1471[*3]	Seat belt pre-tensioner (LH) squib open-circuited
B1472[*3]	Seat belt pre-tensioner (LH) squib drive circuit (earth side) short-circuited
B1473[*3]	Seat belt pre-tensioner (LH) squib drive circuit (power supply side) short-circuited
B1475[*4]	Seat belt pre-tensioner (LH) (squib ignition drive circuit) system detected open
B1476[*2]	Power supply voltage (IG1 (A) voltage) drops abnormally.
B1477[*2]	Power supply voltage (IG1 (B) voltage) drops abnormally.
B1478[*4]	SRS-ECU capacitor circuit voltage too high
B1479[*4]	SRS-ECU capacitor circuit voltage too low
B1496[*4]	SRS-ECU non-volatile memory (EEPROM)
B1497[*4]	SRS-ECU ASIC (for frontal activation)
B1498[*5]	SRS-ECU ROM or RAM
B1499[*4]	Collision Decision
B1509[*2]	Incorrect SRS-ECU
U1073[*2]	Bus-off

NOTE:

- **1: Electrically Erasable Programmable ROM*
- **2: This diagnosis code memory will be automatically cleared from the memory and the SRS warning lamp will be switched off when the system returns to normal condition.*
- **3: The diagnosis codes will remain in memory and the SRS warning lamp will be switched on even if the system returns to normal condition.*
- **4: This diagnosis code can not be erased by "Erase diagnosis codes" function.*

DATA LIST OUTPUT

The data input from all sensors and switches can be read using the MUT-III.

No.	DATA LIST ITEM	CHECK CONDITION	NORMAL CONDITION
01	Failure continuation time 1	Always	Maximum time to be stored: 9999 minutes (approximately seven days)
02	Failure continuation time 2	Always	
10	Elimination times	Always	Maximum time to be stored: 255 days

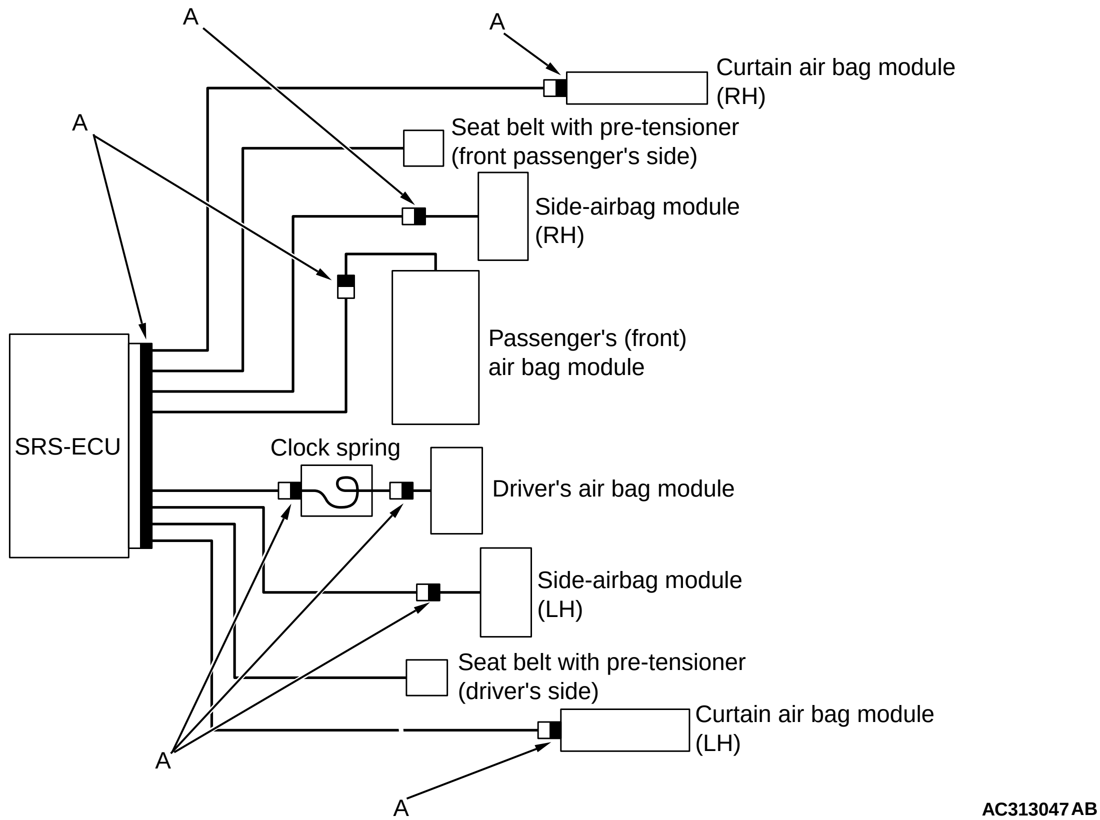
ACTUATOR TEST

The MUT-III can be used to forcibly operate the next actuator.

MUT-III DISPLAY	ITEM NO.	ITEM	PARTS TO BE ACTIVATED
SRS Warning Lamp	01	The SRS warning light illuminates.	CAN output

SRS AIR BAG SPECIAL CONNECTOR

M2521009000143



To enhance the system reliability, the connector engagement check mechanism is used. And a connector lock switch is integrated in the SRS-ECU connector, the air bag module connectors, the clock spring connector, the seat belt pre-tensioner connectors (black connector "A" shown in the illustration above).

NOTE:

- *For details of the structure of the connector lock switch, refer to the 2004 LANCER/LANCER WAGON Technical Information Manual (Pub. No.PYME0302).*